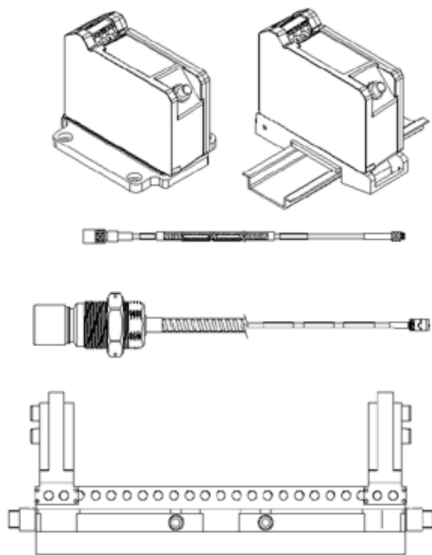


3300 XL Proximity Transducer System

Datasheet

Bently Nevada Machinery Condition Monitoring

163236 Rev. J



Description

The 3300 XL 25 mm Transducer System consists of a separate 25 mm probe, an extension cable, and a 3300 XL 25 mm Proximitor Sensor. The 0.787 V/mm (20 mV/mil) output gives this system a linear range of 12.7 mm (500 mils). Based on this linear range, the 3300 XL 25 mm Transducer System is suitable for measuring differential expansion (DE) on mid-size to large steam turbine generators caused by the difference in growth rates between the turbine rotor and the machine stator (casing).

Measuring Differential Expansion (DE)

The Differential Expansion measurement is made by two proximity transducers observing a collar or ramp some distance from the thrust bearing. Typical transducer mounting arrangements are:

- Two transducers observing the same side of a collar.
- Two complementary input transducers observing opposite sides of a collar, effectively doubling the measurable DE range.

Two transducers with at least one transducer viewing a ramp on a rotor and the second transducer viewing either a separate ramp or a different location on the rotor to compensate for radial movement. This arrangement adds some error to the measurement, but can measure a longer total DE distance than the complementary measurement.

The criteria for selecting a mounting method are the size of the available target, the expected amount of rotor axial movement and the type of DE target that exists in the machine (collar versus ramp). If sufficient collar height is available, two transducers observing the same side of a collar



is the preferred configuration. These two transducers provide redundant measurements.

System Compatibility

The 3300 XL 25 mm probe comes in a large variety of case configurations to physically replace all standard 7200 25 mm, 7200 35 mm and 25 mm DE Integral transducer systems (including side and rear exit probes). The Proximitor Sensor also has an output that is identical to that of the 7200 and 25 mm DE Integral systems, allowing customers to upgrade without requiring any changes in the monitor configuration. When upgrading from previous systems, every transducer system component (probe, extension cable, and Proximitor Sensor) must be replaced with 3300 XL 25 mm components.

Proximity Probe and Extension Cable

The 3300 XL 25 mm probe is designed for maximum survivability in the harshest steam turbine DE environments. It can continually operate and maintain its accuracy in high temperatures up to 200 °C (392 °F), and can withstand intermittent high temperatures up to 250 °C (482 °F). The 25 mm probe has both a front and rear seal which, combined with the FluidLoc cable (standard on all 25 mm probes), prevents moisture from entering the probe tip. Special high-temperature ClickLoc connectors are also standard on the probe and extension cable. Each probe and cable are provided with connector protectors and a disposable connector protector installation tool to ensure that the connectors remain free of contamination. The ClickLoc connector on the probe lead has a removable collar that facilitates routing the cable through tight clearances.

The 3300 XL 25 mm probe is available in many probe case styles, including 1¼-12 or 1½-12 English threads, M30x2 or M39x1.5 metric threads, or side or rear exit probes with a 1.06 or 1.50 inch diameter smooth probe case. Additionally, threaded 3300 XL 25 mm probe

cases come standard with a locknut with predrilled safety wire holes.

Proximitor Sensor

The 3300 XL 25 mm Proximitor Sensor⁽¹⁾ has the same advanced features as our previous 3300 XL Proximitor Sensors. Its thin design allows it to be mounted in either a high-density DIN-rail installation or a more traditional panel mount configuration. Improved RFI/EMI immunity allows the 3300 XL Proximitor Sensor to achieve European CE mark approvals without any special mounting considerations. This RFI immunity also prevents the transducer system from being adversely affected by nearby high frequency radio signals. SpringLoc terminal strips on the Proximitor Sensor require no special installation tools and facilitate faster, highly robust field wiring connections.



(1) Proximitor Sensors are supplied by default from the factory calibrated to AISI 4140 steel. Calibration to other target materials is available upon request.

Mounting Accessories

The correct operation of the transducer system must be verified during installation, and periodically after installation, by physically moving it to simulate the motion of the shaft collar. This requires a mounting bracket that allows the transducer system to slide relative to the shaft rotor and collar.

An optional 3300 XL Sliding Bracket can be ordered for the 25 mm Differential Expansion Transducer for both single transducer and complementary input applications. This mounting bracket makes it easy to accurately verify the transducer system and gap the probes by allowing you to slide the transducer system throughout its linear range. The base plate of the sliding bracket is installed on the inner surface of the turbine case near the differential expansion collar. Probes are installed in the applicable probe adapter, which attaches to the sliding carriage. The sliding carriage slides onto and is secured to the base plate with bolts and safety wire. To verify and

Accessories

163235	3300 XL 25 mm Manual		
148722-01	3300 XL Test Plug. The 3300 XL Test Plug has three self-contained test pins attached to three color-coded wires 1 metre in length, each terminated in a banana plug. The three-pin adapter plugs into the test pin holes on 3300 XL-style Proximitors sensors. It is used to check the performance of the Proximitors sensor from the test pin holes in the terminal strip without requiring the removal of the field wiring.	03200006	Silicone self-fusing tape. A 9.1 metre (10 yard) roll of silicone tape to protect connectors. It is easy to install and provides excellent electrical isolation and protection from the environment. It is not recommended for use inside the casing of the machine.
330187	Extended Range Micrometer Kit. The extended range micrometer kit contains a precision micrometer and AISI 4140 target and is intended for acceptance testing of our Bently Nevada extended range transducers. Bracket options are available to hold 8mm – 35mm probes and also the 50 mm DE transducer.	40113-02	Connector Protector Kit. Connector Protector Kit for 3300 XL probes and extension cables, including connector protectors and installation tools.
02120015	Bulk field wire. 1.0 mm ² (18 AWG), 3 conductor, twisted, shielded cable with drain wire. Specify length in feet.	29660-01	Transducer Clamp. Optional mounting clamp for the 1.06" dia smooth 3300 XL 25mm probe case types (-03 and -04 only).
02173009	Bulk field wire. 1.0 mm ² (18 AWG), 3 conductor, twisted, shielded cable. Specify length in feet.	136536-01	Connector Protector Adapter. Makes our previous 3300 connector protector kits compatible with 3300 XL probes and extension cable connectors.
138492-01	Replacement panel-mount mounting pad	40180-02	Connector Protectors. Package contains 10 pairs of connector protectors.
138493-01	Replacement DIN-mount mounting pad	03839410	Male Connector Protector. Placed on the extension cable to connect to the female connector protector on the probe and provide environmental protection of connectors.
04310310	3300 XL Proximitors Sensor Panel-mount Screws. Package includes four 6-32 UNC thread forming mounting screws (Supplied standard with 3300 XL Proximitors Housings [3300 XL option]).	03839420	Female Connector Protector. Placed on the probe lead to connect to the male connector protector on the extension cable and provide environmental protection of connectors. Also placed on the extension cable to slide over the Proximitors Sensor connection and protect it from the environment.